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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/688,864	10/17/2003	Emanuel Michael Sachs	EVG-018	9442

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EXAMINER

SONG, MATTHEW J

ART UNIT PAPER NUMBER

1722

DATE MAILED: 11/01/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

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<b>Office Action Summary</b>	<b>Application No.</b> 10/688,864	<b>Applicant(s)</b> SACHS, EMANUEL MICHAEL	
	<b>Examiner</b> Matthew J. Song	<b>Art Unit</b> 1722	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 08 August 2006.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-70 is/are pending in the application.
- 4a) Of the above claim(s) 1-10, 23-58 and 60-63 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 11-22, 59, and 64-70 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 11 and 13 are rejected under 35 U.S.C. 102(b) as being anticipated by Ciszek et al (US 4,299,648).

Ciszek et al discloses a growth crucible for forming a monocrystalline ribbon comprising a shaping die 9, this reads on applicant's mesa because it is a relatively flat top elevation.

3. Claims 11 is rejected under 35 U.S.C. 102(b) as being anticipated by Berkman et al (US 4,334,948).

Berkman et al discloses a growth apparatus for growing a crystal ribbon comprising a die 14 having a plurality of passages for growing multiple ribbons (col 3, ln 55-68), this reads on applicant's mesa because the crucible has a relatively flat top elevation defined by the die.

4. Claims 11, 12, 16, 19 and 22 are rejected under 35 U.S.C. 102(b) as being anticipated by Morrison (US 4,861,416).

Morrison discloses an apparatus for growing a silicon ribbon comprising a relatively shallow tray 88 connected to a pair of deeper containers 90, 92, this reads on applicant's mesa

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because the apparatus include a relatively shallow tray that is elevated above the deeper containers used to hold a melt.

Referring to claim 12, Morrison discloses a filament guides **94, 96**, this reads on applicant's strings.

Referring to claim 16, Morrison discloses melt about the mesa (Fig 7).

Referring to claim 19, Morrison discloses recessed top (Fig 7).

Referring to claim 22, Morrison discloses a heat source **67** capable of controlling temperature.

### ***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 13-15, 18, 20-21 and 64-70 are rejected under 35 U.S.C. 103(a) as being unpatentable over Morrison (US 4,861,416) as applied to claims 11, 12, 16, 19 and 22 above, and further in view of Janoch et al (WO 01/04388 A2).

Morrison discloses all of the limitations for claims 13-15, as discussed previously, except the boundary profile of the ribbon.

In a method of forming a crystalline ribbon, note entire reference, Janoch et al teaches using a meniscus controller to control the shape of the growth interface to control and vary the

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meniscus (pg 2, ln 15-23 and pg 12, ln 5 to pg 13, ln 10). Janoch et al also teaches growing concave and convex (pg 12, ln 5 to pg 13, ln 10). Janoch et al teaches controlling the meniscus improves the yield of silicon ribbon production (pg 2, ln 1-15).

It would have been obvious to a person of ordinary skill in the art at the time of the invention to modify Morrison by including the meniscus controller taught by Janoch et al to control the meniscus, thereby improving yield.

Referring to claim 13-15 and 68-70, the combination of Morrison and Janoch teaches a meniscus controller capable of claimed intended use.

Referring to claim 18, the combination of Morrison and Janoch teaches when growing silicon the material for structural member is graphite ('388 pg 10, ln 5-15).

Referring to claim 20, the combination of Morrison and Janoch does not teach the claimed size. Changes in size are held to be obvious (MPEP 2144.03). It would have been obvious to a person of ordinary skill in the art at the time of the invention to modify the combination of Morrison and Janoch by changing the size to the claimed size to grow a ribbon of desired size.

Referring to claims 21, 64 and 65, the combination of Morrison and Janoch teaches a means of replenishing the melt using a hopper ('388 pg 17, ln 1-15, Fig 7 and Fig 11) for a continuous process.

Referring to claim 66, the combination of Morrison and Janoch teaches a tube ('388 Fig 11).

Referring to claim 67, combination of Morrison and Janoch does not teach the claimed size and distance. Changes in size are held to be obvious (MPEP 2144.03). It would have been

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obvious to a person of ordinary skill in the art at the time of the invention to modify the combination of Morrison and Janoch by changing the distance to shorten the length the feed needs to travel.

7. Claims 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Morrison as applied to claims 11, 12, 16, 19 and 22 above, and further in view of Berkman et al (US 4,334,948).

Morrison teaches all of the limitations of claim 17, as discussed previously, except more than one pair of strings.

In a method of growing crystal ribbons, note entire reference, Berkman et al teaches a growth apparatus for growing a crystal ribbon comprising a die 14 having a plurality of passages for growing multiple ribbons (col 3, ln 55-68), this reads on applicant's mesa because the crucible has a relatively flat top elevation defined by the die.

It would have been obvious to a person of ordinary skill in the art at the time of the invention to modify Morrison by using a plurality of strings to produce multiple ribbons simultaneously, as taught by Berkman et al. Furthermore, duplication of parts is held to be obvious (MPEP 2144.03).

8. Claim 59 is rejected under 35 U.S.C. 103(a) as being unpatentable over Morrison as applied to claims 11, 12, 16, 19 and 22 above, and further in view of Little (US 4,402,786).

Morrison teaches all of the limitations of claim 59, as discussed previously, except an insulator and a moving means for moving the insulator.

In a method of forming crystal ribbons, note entire reference, Little teaches modifying the temperature distribution along the solid/liquid boundary during growth. (col 2, ln 1-45). Little teaches using a heat shield assembly which can be moved relative to each other to ensure the growing body will have a constant cross-section by controlling the temperature distribution. (col 2, ln 1-45).

It would have been obvious to a person of ordinary skill in the art at the time of the invention to modify Morrison by using the movable heat shield taught by Little to ensure the growing body will have a constant cross-section by controlling the temperature distribution.

### ***Response to Arguments***

9. Applicant's arguments filed 8/8/2006 have been fully considered but they are not persuasive.

Applicant's argument that Ciszek, Berkman and Morrison does not teach a mesa crucible that retains edge of a melt by capillary attachment to the edges of the mesa crucible is noted but not found persuasive. Claim 11 is directed to an apparatus. The only apparatus limitation of claim 11 is a mesa crucible having edges defining a boundary of a top surface of the mesa crucible. The prior art of record clearly discloses a crucible with a relatively flat top elevation, which the ordinary definition of a mesa. The limitation that the crucible retaining edges of a melt by capillary attachment to the edges of the mesa crucible is merely an intended use because capillary action is merely the surface tension interaction between a liquid and solid in contact with the liquid, which does not impart a structural limitation to the crucible. The prior art of record discloses edges which are capable of retaining a melt by capillary action. A recitation of the intended use of the claimed invention must result in a structural difference between the

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claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. Referring to Ciszek, the shaping die 9 meets all of the structural limitation of the mesa crucible. Referring to Berkman, the die member 14 within the crucible meets all of the structural limitations of the mesa crucible. Referring to Morrison, the elevated portion 88 with the guide portions 94, 96 meet all of the structural limitations of the mesa crucible.

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., a mesa crucible is a crucible which has the general form of a mesa- generally flat top surface and steep side walls (pg 15 of the remarks)) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Applicant's argument regarding the rejection of claims 13-15, 17, 18, 20-21, 59 and 64-70 under 35 U.S.C 103(a) are noted but are not found persuasive because the arguments are directed to additional prior art references which do not teach the claimed mesa crucible feature. However, Morrison does disclose a mesa crucible, as discussed previously.

### ***Conclusion***

**10. THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO**



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MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matthew J. Song whose telephone number is 571-272-1468. The examiner can normally be reached on M-F 9:00-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Yogendra Gupta can be reached on 571-272-1316. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Matthew J Song

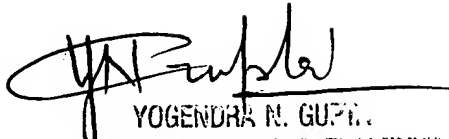
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Examiner  
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MJS  
October 21, 2006



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